TORCGUN™
PNEUMATISCHE LUCHTMOMENTSLEUTELS

USER MANUAL

jGUN Single Speed
jGUN Dual Speed Plus
jGUN Nutrunner / WheelGUN

CE-MARKING
This tool has the CE-mark. This means that jGUN Air meets the applicable European directives. In the enclosed Declaration of Conformity the guidelines are mentioned.

Use installation only in accordance with regulations and instructions in this manual. Consult Hytorc in doubt about using.

We assume that you, your employees and others who use or encounter the machine are aware how they should handle it. This includes the proper use, maintenance and repair of the jGUN Air as defined in this manual. This also means that employees are familiar with the use of this type of tool through training or experience.

DISCLAIMER:
Hytorc Nederland BV and Hytorc Benelux BVBA exclude legal responsibility for unsafe situations, accidents or damage that may result from:

- Ignoring warnings or instructions as shown on the jGUN Air or in this documentation.
- For other applications or under conditions other than those specified in this documentation.
- Modifications to the jGUN Air. This includes the use of other than original spare parts.
- Inadequate maintenance.
- Unauthorized removal of safety covers and/or safeguards.
- The improper use of the tool.
- Modifications and/or changes that affect the safety of the jGUN Air should not be carried out without permission of Hytorc and are not within the responsibility of Hytorc, but are full responsibility of the person who makes the adjustments. The warranty expires the moment when modifications and/or changes are applied.
- Hytorc Netherlands BV and Hytorc Benelux BVBA are not responsible for consequential damages in case of failure to jGUN Air (for example product damage, business interruptions).

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1. WELCOME AT TORCGUN

Thank you for buying your jGUN tool.

This user manual and safety instructions is designed to provide you with the basic knowledge required to operate and maintain your new jGUN equipment.

Please read this manual carefully and follow the instructions provided. If you still have any questions regarding jGUN equipment, please do not hesitate and call us at +31 (0) 24 3660 660 or contact us at info@hytorc.nl. You can also find more information on our website www.hytorc.nl.

2. GENERAL INFORMATION

Purchasing your jGUN tool entitles you to the following services:

- Instructions to your employees within your organization by our specialist
- Free annual inspection of your jGUN equipment
- When you need help abroad? No problem! We help you!
- jGUN equipment according to the newest technology
- Qualified work force employable for solutions at difficult challenges

3. SAFETY INSTRUCTIONS

Warning: Your jGUN is a power tool, and as with any power tool, certain safety precautions should be observed to avoid accidents or personal injury.

The following instructions will assist you:

- **Store equipment properly.** When not in use, tools and accessories should be properly stored to avoid deterioration.

- **Proper safety attire**. When handling/operation power equipment use work gloves, hard hats, safety shoes and other applicable clothing.

- **Use safety glasses with side covers.**

- **Moving equipment**. Do not use the hose as means of moving the jGUN equipment.

- **Maintain your jGUN equipment with care.** For top performance, inspect tools, power pack and accessories for visual damage frequently and always prior to use. Always follow instruction for proper tool and air supply maintenance. Also read chapter 11 Maintenance of this manual.

- **Stay alert!** Watch what you are doing. Use Common sense. Do not use power equipment under the influence of any mood altering substances.

- **Prior to operation:**
  - Ensure that all connections are securely connected and there is no leakage.
  - Verify that the hoses are not kinked or otherwise damaged.

- **Prior to use:**
  - Cycle tool to ensure proper function.
  - Locate a solid, secure reaction point.
  - Be sure the reaction arm retaining clamp is fully engaged.
  - Pressurize the system momentarily; if the tool tends to “ride up" or to “creep", stop and re-adjust the reaction arm to a more solid and secure position.

- **Stay away of the reaction points.** Remain clear of the reaction arm during operation and never put body parts between reaction arm and reaction surfaces!

- **Always use quality accessories.** Always use top quality impact sockets in good condition that are the correct size and fully engage the nut. Hidden flaws, however, remain a possibility that could cause breakage, so stay clear of sockets during operation and always wear safety glasses with side covers.

- **Do not use other equipment to enhance performance.** For example a hammer on the socket or tool.

- **Only authorized personnel are allowed to operate the jGUN-tool.**

- **The jGUN-tool should only be used for activities as recorded in the specifications.**

- **Ensure that the specified capacity and application of the tool is never exceeded.**

- **Ensure that children, unauthorized persons and animals have no access the jGUN tool!**

- **Safety devices should not be removed or disabled.**

- **It is not allowed to execute maintenance and/or repairs when the tool is in operation.**

- **Keep the work area clean.**

- **Provide adequate lighting in the surrounding, and passages etc., for achieving the best possible climate to work with the tools.**

- **Always follow local labour and safety laws and environmental regulations.**

Comment:
jGUN air supply maintenance sets (FRL Unit) are exclusive for jGUN tools and vice versa. Damage may occur to the air supply maintenance set or the product that is being operated due to misuse.

You can find a version of the instructions on the reserve side of the torque charts.
STORE THESE SAFETY INSTRUCTIONS WITH YOUR jGUN TOOL!

4. INTRODUCTION

The jGUN is worlds first and only Tension Gun calibrated for both bolt load as torqueing! This tensioning gun guarantees safe, fast and simple operation without vibration.
The gun is powerful and yet light. All guns can operate without reaction arm or wrench. Unlike impact wrenches, the jGUN never transmits working torque to the operator. The torque is applied between the fastener and the reaction surface. The best result is achieved in combination with the HYTORC LoadDISC or the HYTORC NUT. This manual provides information for the jGUN Single Speed, jGUN Dual Speed Plus, jGUN Nutrunner and WheelGUN.

Fig. 1: Application jGUN Single Speed

5. PHYSICAL OPERATING CONDITIONS

The following physical conditions apply:

Ambient temperature, operating	:	0 to 45 degrees Celsius
Relative humidity (RH)	:	30% to 95% non-condensing
Lighting	:	standard ambient lighting
Altitude	:	air pressure up to 1000 m above sea level

Watch out for freezing jGUN at low temperatures.
The jGUN is not suitable for an explosive environment.
Cold reduces the operating time; this also depends on atmospheric humidity.

6. AIR SUPPLY MAINTENANCE SET (FRL UNIT)

The Filter Regulator Lubricator Unit (jGUN-FRL) has to be used in combination with the tool jGUN. The jGUN air supply maintenance sets (FRL Unit) are exclusive for jGUN tools and vice versa. Damage may occur to the air supply maintenance set or the product that is being operated due to misuse.

Fig. 2: Air supply maintenance set (FRL unit)

With the 3,5 meter hose this set is connected to the jGUN. The FRL Unit removes water and other contaminations from the air supply, regulates the air pressure and mixes oil in the air for maintaining your tool.

Hose should not be extended or shortened!

Operating the jGUN without the FRL Unit will void the warranty and may cause damage to the air motor and gearbox. Incorrect setting of the lubricator unit may result in a shortage of lubrication to the air motor and gearbox resulting in damage to the tool.

6.1 Requirements for the air supply

- The air supply line should be ½ inch minimum diameter to allow adequate air flow to the jGUN, when the length is shorter than 5 meter.
- The air supply line should be ¾ inch minimum diameter to allow adequate air flow to the jGUN, when the lengths are between 5-15 meter.
- The air supply line should be 1 inch minimum diameter to allow adequate air flow to the jGUN, when the length is longer than 15 meter.
- The air supply should provide a minimum of **6,5 bar and 1600 l/min** to reach maximum power.
- Ensure that airline fittings are tight and leak free. Do not over tighten airline fittings.
- Always use the Filter Regulator Lubricator (FRL) Unit provided with the jGUN. Never use a substitute oiler and regulator.
- Never change the length of hose from the FRL to the jGUN. A difference in length of the hose can affect the accuracy and sustainability of the tool.

6.2 Filter reservoir

Before each use, you may empty the filter reservoir of water and contaminations in two ways:

1. Emptying water through the release valve on the underside of the reservoir. To use the release valve, push the valve until the water or debris drains out of the reservoir.
2. Removal of the reservoir. To remove the reservoir from the FRL Unit:
   a. Push down on the black square button to unlock the reservoir.
   b. Twist the filter reservoir until the two lines on the FRL body and the filter reservoir are aligned.
   c. Pull the filter reservoir down to detach from lubricator body.
   d. Discard the contents of the filter reservoir.
   e. Reattach the filter by aligning the lines on the filter reservoir and FRL body, and pushing up on the reservoir, then twisting the reservoir to lock it in place. The black locking button should snap into its original position.

Fig. 3: Loosen the reservoir

Fig. 4: Emptying the FRL Filter Reservoir

6.3 Oil reservoir

To lubricate the air supply maintenance set, the oil reservoir needs to be 2/3 filled with oil before each use. How do you fill the oil reservoir?

1. Push down on the black square button to unlock the reservoir.
2. Twist the oil reservoir until the two lines on the FRL body and the filter reservoir are aligned.
3. Pull the oil reservoir down to detach from lubricator body.
4. Fill the lubricator reservoir with pneumatic tool oil for 2/3.
5. Reattach the filter by aligning the lines on the filter reservoir and FRL body, and pushing up on the reservoir, then twisting the reservoir to lock it in place. The black locking button should snap into its original position.

Fig. 5: Filling Oil reservoir

6.4 System oil supply adjustment

Shortage of lubrication may cause the motor to seize. Turn the flow adjustment knob (the same view-glass) clockwise or counter-clockwise until the oil is dripping at a rate of at least 1 drop every 10 seconds (6 every minute). Do this adjustment at 4 bars. Run the tool while watching the rate at which oil drips through the acrylic view-glass on the lubricator unit (= small view-glass on top of the oil reservoir, also flow adjustment knob).

➔ Turn the transparent adjustment knob until 1 drop of oil drips every 10 seconds.

Fig. 6: Oil adjustment

6.5 Air pressure adjustment

You can adjust the air pressure while reading from an analogue manometer. The inner scale shows the pressure in BAR. The outer scale shows the pressure in PSI. Adjust the pressure with the adjustment knob on top of the FRL. Determine the air pressure needed to achieve the desired torque by consulting the Pressure/Torque Conversion Chart provided with each tool.

Fig. 7: Air pressure adjustment.

Open the air supply connected to the FRL unit and run the torque wrench while setting the pressure on the gauge. The torque wrench has to run while the pressure is set. When the torque wrench is stopped, the gauge displays a slightly higher pressure than was set with the jGUN running. This is normal, proper torque is delivered under working load.

7. REACTION ARM AND SOCKET INSTALLATION

Fig. 8: Standard reaction arm jGUN

- Choose the correct reaction arm for the job. The jGUN is shipped with a standard length reaction arm, but your gun may have been ordered with custom-length reaction arm for a specific purpose.
- Do not change the reaction arm for no reason. It may cause personal injury and damage to the tool. If you make adjustments to the reaction arm yourself your warranty is withdrawn. Contact Hytorc for a custom made reaction arm.

Fig. 9: Reaction Arm Installed at jGUN Single Speed

- Clean the reaction arm and jGUN square drive mating surfaces before installing the reaction arm.
- Slide the reaction arm onto the jGUN square drive with the reaction arm extension facing out. Failure to install the reaction arm correctly could result in the reaction arm coming in contact with your hand or other another part of your body, causing personal injury.

Fig. 10: Tightening Reaction Arm Set Screw

- Lock the reaction arm to the jGUN by al aligning the set-screw with the hole in the splined section and then tightening the set screw firmly.

Fig. 11: Installing jGUN Socket

- Place the appropriately sized socket onto the jGUN square drive.

Fig. 12: Installing Socket Locking Pin and Retaining Ring

- Install the socket locking pin and retaining ring. The socket cannot drop off the square drive anymore.

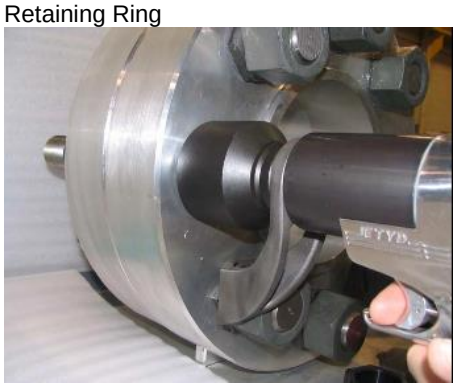


Fig. 13: Right placement of Reaction Arm

WARNING! Ensure that the reaction arm is in direct contact with an appropriate immovable object before beginning to tighten the fastener. Never put body parts between reaction arm and reaction surfaces!

7.1 Installing the special LoadDISC double socket drive

Fig. 14: LoadDISC with double socket drive

- In addition to the added safety of having no external moving parts, the LoadDISC Washer system provides a universal reaction point for all applications, eliminating the need for custom-designed reaction arms. Concurrently, the threaded segment inside of the washer stops the bolt from turning, eliminating the need for back-up wrenches.

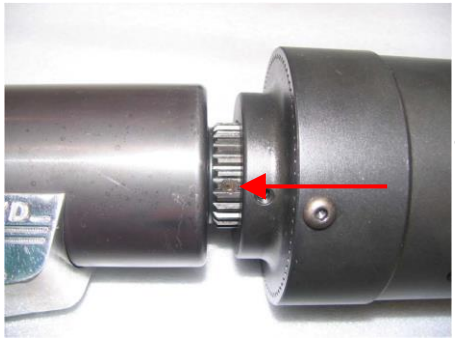


Fig. 15: Aligning HYTORC Washer Socket Set Screw with machined Recess in jGUN Splines

- First disassemble the existing reaction arm and place the LoadDISC double socket drive in a way that the set screw aligns with the machined recess in the jGUN spline.

Fig. 16: Tightening HYTORC Washer Set Screw

- Move the double socket drive on to the axis and tighten the set screw to secure the double socket drive to the axis.

8. USE OF WRENCH

8.1 Installing torque

Every tool has its own torque chart, separately delivered with your jGUN tool. Determine the torque value for the fastener to be tightened, as shown in the Bolt Torque Specifications table provided with each tool, in BAR (right) or in PSI (left). Open the air supply connected to the FRL unit and run the torque wrench while setting the pressure on the gauge.

The torque wrench has to run while the pressure is set!

DRUK PRESSURE	AANHAALMOMENT IN			DRUK PRESSURE
PSI	Ft.lbs	Kgm	Nm	BAR
1.000	164	23	219	70
1.200	197	28	262	84
1.400	231	32	306	98

Fig. 17: Torque chart

8.2 Changing the Drive Direction (loosen or tighten)

To change the square drive direction from forward to reverse or vice versa. Move the directional lever on the back cover to the left (Tighten) or right (Loosen). Be sure the lever is fully engaged in either direction before operating the gun.

Fig.18: jGUN Drive Direction Lever

Fig. 19: jGUN Single Speed into action

8.3 Tighten a fastener

1. Place the correct size impact socket on the square drive and secure it with the locking pin and ring.
2. Ensure that the square drive is fully engaged into the socket.
3. Engage the socket onto the nut.
4. Place the reaction arm to the reaction point by hand. Ensure the reaction arm is fully engaged and located on a solid, secure reaction point.
5. Ensure if hoses and tool are clear of any obstacles.
6. Ensure that no odd parts are in the operation zone.
7. Be aware that the tool can turn.
8. Pressurize the system momentarily to check if the socket is placed onto the jGUN correctly.
9. If the tool tends to ride up, stop and readjust the reaction arm to a more solid and secure position.
10. Tighten the bolted connection by pulling the trigger until the socket stops turning.

8.4 Loosening a Fastener

1. Set the FRL Pressure to max PSI as listed on Pressure/Torque Conversion Chart.
2. Ensure the torque wrench is set to the loosening direction.
3. Check the position of the reaction arm rest point.
4. Fully engage the torque wrench socket on the nut.
5. Pull the trigger until you notice the fastener is loose.

9. OPTIONAL SAFETY LEVER

If the jGUN is equipped with an extra Safety Lever, this lever is placed at the rear side of the jGUN. This lever complicates to put the second free hand at the reaction arm or in the surrounding of the reaction arm, and increases the safety of the operator at time of torqueing.
To put the right torque value to the bolt with this jGUN version, it is necessary to press the safety lever at the same time as the operation trigger.

Fig. 20: Safety lever at the rear side of a jGUN

Fig. 21: Pushing the safety lever while tightening

10. SUPPLEMENT FOR THE JGUN DUAL SPEED PLUS AND JGUN NUTRUNNER / WHEELGUN

The jGUN Dual Speed Plus, Nutrunner and Wheelgun provides the speed and convenience of an impact wrench without its noise, vibration and load variation. Its twin torque mechanism has a first stage for nut rundown and removal with amazing RPM's and torque! The second stage is used for applying the final torque to the bolt.

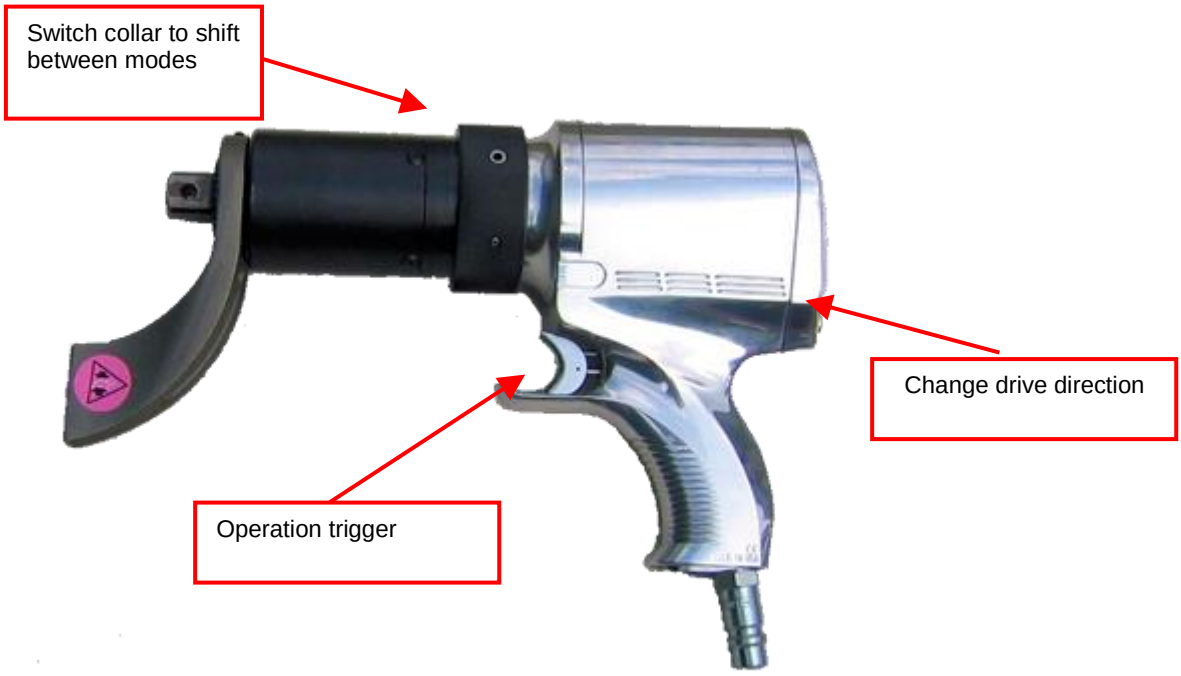


Fig. 22: jGUN Dual Speed Plus

10.1 Shifting Between Modes

The jGUN Dual Speed Plus and the jGUN Nutrunner / WheelGUN have two settings: High Speed and Maximum Torque.

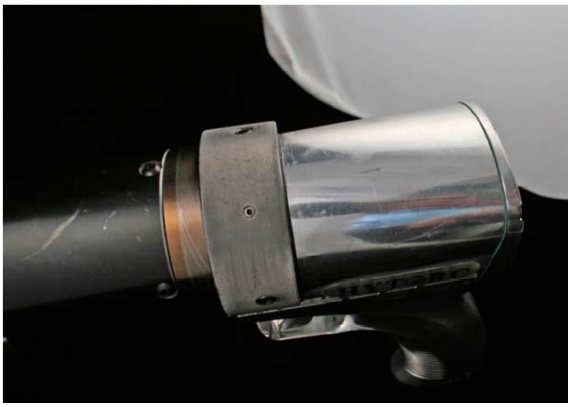


Fig. 23: High speed mode

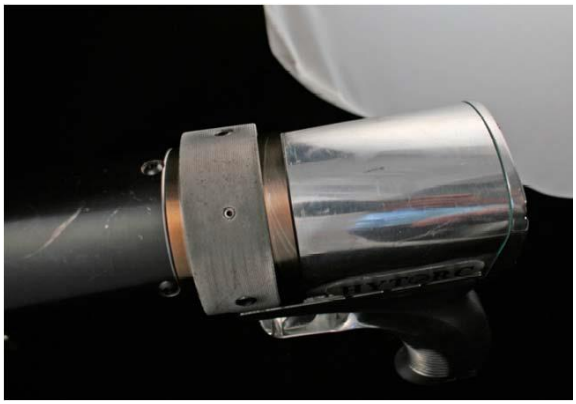


Fig. 24: Maximum torque mode

<u>High speed mode:</u>

- Shifting into high speed requires holding the gear box body and twisting the collar backwards as shown. The collar is adjoining the chrome part now (Figure 23 – left photo).
- Once engaged, the housing will rotate with the square drive at a much higher rate than the maximum torque setting. Use this feature when you want to run nuts on or off studs in a quick and efficient manner.
- Working in the high speed mode a limited tightening torque is possible. This differs per model.
- Working with this mode requires a good positioning of the reaction arm against its chosen support point first, to prevent swinging of the arm.

<u>Maximum torque mode:</u>

- To activate this mode twist the collar and move it forward towards the barrel of the gun (Figure 24 – right photo). The collar will lock into place when fully engaged.
- Operation during the maximum torque mode is similar to that of the single speed jGUN. The torque is applied until the bolts reach the desired load for any specific application. See chapter 7.

NEVER SWITCH GUN MODES ON THE FLY

<u>jGUN Nutrunner & WheelGUN:</u>

- The jGUN Nutrunner and WheelGUN are more robust than the jGUN Dual Speed Plus. The housing is larger due to a more powerful motor. In addition, the WheelGUN has a special reaction arm to tighten wheel bolts.

Fig. 25: WHEELGUN

11. REPAIR AND MAINTENANCE

Although the FRL is a self-contained unit and does not require heavy maintenance, proper repair and preventative maintenance will ensure the life span of the unit.

11.1 Inspection before each use

- Check the level of oil in the oil reservoir.
- Empty the Filter Reservoir of water and foreign material.
- Visually inspect air lines and air line fittings before tool use.
- Ensure that air line fittings are tight, but not over tight.

CAUTION!
Loose fittings can be potentially dangerous when pressurized. Over tightening fittings can cause permanent thread failure. Ensure fittings to be tight but not over tight.

11.2 Lubricating the Air Motor

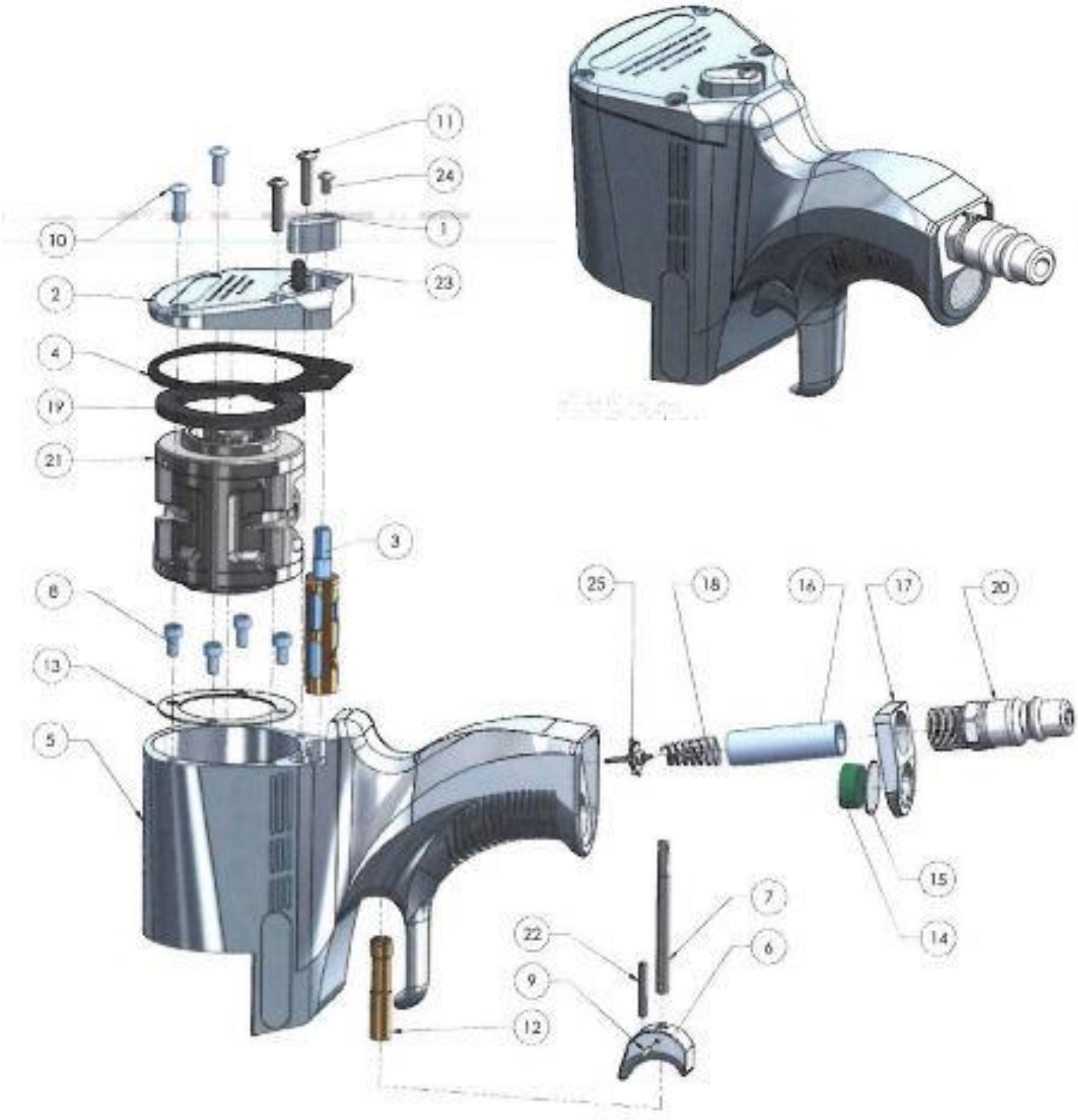
- Turn the jGUN upside down and disconnect the air hose at the hose coupling connection.
- Pour approximately one ounce of air tool oil, or spray a lubricant, into the hose coupling on the gun.
- Reconnect the hose and operate the gun, while standing clear of the exhaust opening at the base of the handle. Excess lubricant will release from this opening upon initial operation.

11.3 Calibration

Every tool has its own pressure / torque conversion chart, which is separately provided with your jGUN-tool. Lookup the required torque in the correct column (Nm, kgm or ft.lbs.) from the associated table and read the corresponding pressure in Bar or psi. The stated accuracy is +/- 10%. If you properly maintain your tool and keep it in good working condition, it will stay within this stated accuracy.

If the torque required is for a critical application or if the torque output is in question, the torque accuracy or output of a tool can and should be verified through calibration by us.

12. PARTS LIST JGUN SERIES



Item No.	Part Number	Description	QTY
1	P000441	Directional switch	1
2	P000442	Handle rear cover, J1-J3SS/DS	1
3	A000148	Air Valve Assy, J1-J3	1
4	P000440	Gasket for back cover	1
5	P000447	Handle J3DS configuration	1
6	P0000030	Trigger, handle easy	1
7	P000237	Trigger rod, handle assy	1
8	K000127	SHCS #8-32 x 5/16	4
9	K000126	Roll pin for trigger	1
10	K000083	SHCS #8-32 x ½	2
11	K000172	SBHCS #8-32 x ¾”	2
12	P000427	Trigger shaft bushing	1
13	P000036	Gearbox lock plate	1
14	P000034	Noise filter	1
15	K000163	Mesh screen for handle	1
16	P000032	Main valve inlet spacer	1
17	P000035	Bottom plate, handle assy	1
18	K000161	Conical spring .343 x .500 x .88 oal	1
19	K000018	Motor spacer, J1-J3	1
20	K00138	Air fitting J.5-J3	1
21	A000140	Motor assy J1-J3	1
22	K000041	Dowel pin 1/8 x 7/8	1
23	K000167	Ball nose plunger	1
24	K000170	SBHCS #6-40 x ¼”	1
25	A000150	Control valve assy	1

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Item NO.	Part Number	Description	QTY.
1	A000071	4th stage cage assy, J3SS/ J3DSP	1
1.1	P000263	4th stage cage, J3SS/J3DSP	1
1.2	P000224	16/21-11 tooth-325 oal (J3SS/DSP 4th planet)	4
1.3	K000124	Bushing 3/16" x ¼" x ¼"	1
1.4	K000120	Dowel pin ¼ x ½	4
2	A000056	3rd stage cage assy, J3SS	1
2.1	P000221	3rd stage cage , J3SS	1
2.2	K000123	Bushing 1/8" x 3/16" x 3/16"	1
2.3	P000222	16/21-11 tooth-.210 oal (J.5-J3SS 3RD)	4
3	A000055	2nd stage cage assy, J.5-J3SS	1
3.1	P000220	2nd stage cage, J.5-J3SS	1
3.2	K000123	Bushing 1/8" x 3/16" x 3/16"	1
3.3	P000219	16/21-13 tooth-.170 oal (JP5-J1SS 2nd, JP15-J3SS 1st & 2nd)	4
4	P000227	Bearing spacer, JP15-J3SS-DSP	1
5	P000226	Housing adapter JP15-J3SS	1
6	P000225	Gearbox connector, JP15-J3SS	1
7	P000163	Front bushing, J3DS	1
8	P000217	Input shaft, JP15-J3SS	1
9	A000054	1st stage cage assy, JP15/J3SS	1
9.1	P000218	1st stage cage, JP15/J3SS	1
9.2	K000123	Bushing 1/8" x 3/16" x 3/16"	1
9.3	P000219	16/21-13 tooth-.170 oal (JP5-J1SS 2nd, JP15-J3SS 1st & 2nd)	4
10	A000012	6th stage cage , J3	1
10.1	P000080	6th stage cage , J3	1
10.2	P000081	16/21-12 tooth-1.125 oal (J3 6th)	4
10.3	K000045	Dowel pin 3/8 x 2	4
11	K000129	Retaining ring external 25 mm	1
12	K000122	Retaining ring internal 21 mm	1
13	K000137	Retaining ring internal 2.324	1
14	K000092	Bearing 25 mm x 37 mm x 7 mm	1
15	K000112	Bearing 12 mm x 21 mm x 7 mm	1
16	K000070	SBHCS ¼-28 x ¼	4
17	K000085	Retaining ring 1.6" internal	1
18	P000154	Big housing, J3SS-DS-DSP	1
19	A000259	5th stage cage assy, J3	1
19.1	P000472	5th stage cage, J3	1
19.2	P000078	16/21-12 tooth-.500 oal (J3 5th)	4
19.3	P000079	Final stage bushing	1
19.4	K000044	Dowel pin 5/16 x 7/8	4
19.5	K000177	5th stage bushing, J3	1
20	P000473	Output shaft, J3DS	1
21	P000478	Drive retaining washer, J3	1
22	P000479	Drive retaining screw, J3 (5/16-24 x ¾")	1
23	P000216	Small housing, J3SS	1